Doc Code: AP.PRE.REQ

PTO/SB/33 (07/05)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): YOR920030551US1

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on May 1, 2006

Signature Elaine F. Mian

Typed or printed name Elaine F. Mian

Application Number	Filed
S/N 10/735,053	12/12/2003

First Named Inventor: Gopal Pingali

Art Unit	Examiner
2851	Sever, Andrew T.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [x] attorney or agent of record. Registration number 47,387
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

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May 1, 2006
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

- [ ] *Total of _ forms are submitted.

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:

APPLICANTS: Pingali et al. CUSTOMER NO. 48237

SERIAL NO.: 10/735,053 FILING DATE: 12/12/2003

EXAMINER: Sever, Andrew T. ART UNIT: 2851

ATTORNEY'S DOCKET NO.: YOR920030551US1

TITLE: A SYSTEM AND METHOD FOR POSITIONING PROJECTORS IN SPACE TO STEER PROJECTIONS AND AFFORD INTERACTION

PRE-APPEAL BRIEF REQUEST FOR REVIEW ATTACHMENT

The following is a concise recitation of clear error in the Examiner's rejections in this application.

1. In the final Office Action of December 29, 2005, the Examiner rejected claims 1-3, 5, 6, 15-32 and 34-40 as being unpatentable over Miyamoto et al. (5,114,224) in view of Raskar (US 6,793,350) and Connelly et al. (2003/0202156). With respect to claim 1, the Examiner asserted that Miyamoto et al. teach " projecting a distorted image ... wherein the at least one mount is coupled to a mechanism for providing rotational movement for adjusting one of a position and an orientation of the projection unit to produce from the distorted image a substantially undistorted image on a surface. (as stated above with regards to Raskar it is obvious that a undistorted image would be produced, in general people do not purposely make highly distorted images when advertising which is what Miyamoto is designed for.)"

Applicants respectfully assert that the Examiner is in error. As argued previously and detailed below, Miyamoto makes no mention of a distorted image, neither teaches nor suggests a motivation for projecting a distorted image, and lacks a teaching of a mechanism by which Miyamoto could distort an image. However, assuming, arguendo, that Miyamoto were to teach projecting a distorted image, Miyamoto does not teach "providing translational movement and rotational movement for adjusting one of a position and an orientation of the projection unit to produce from the distorted image a substantially undistorted image on a surface" as claimed.

As Miyamoto states in the Abstract, "The image projecting apparatus projects the image by automatically tracking the position of the moving light emitting member of the reflective medium. Consequently, **the image can be continually projected at the**

predetermined position, automatically tracking the moving object such as an airship or a balloon, so that it can be available as an effective advertising medium or news." (emphasis added). As is evident, what rotational movement of the projection unit of Miyamoto is taught to be performed to track a moving object, and not "**to produce from the distorted image a substantially undistorted image on a surface**" as claimed.

It is therefore evident that Miyamoto does not teach "**a projector for projecting a distorted image**; wherein the at least one mount is coupled to **a mechanism for providing translational movement and rotational movement** for adjusting one of a position and an orientation of the projection unit **to produce from the distorted image a substantially undistorted image on a surface**" as claimed.

The Examiner cited Connelly as teaching "in figure 1a, a mechanism for providing translational movement for adjusting the position of a projection unit mounted on it. Connelly teaches in paragraphs 9 and 10 that such a translational movement system allows for the use of multiple projectors in the same location and also more versatility in positioning the projector allowing for less keystone distortion." Applicants respectfully assert that Connelly does not teach a projector for projecting a distorted image, nor is there taught "**a mechanism for providing translational movement** and rotational movement for adjusting one of a position and an orientation of the projection unit **to produce from the distorted image a substantially undistorted image on a surface**" as claimed.

Applicants note that Raskar teaches, at col. 10, lines 14-16, "In our case, instead of pre-distorting the geometry, we pre-distort the image space projection." However, it is the use of the image space projection, and not a result of any translational or rotational movement of the projection unit, that results in the projected image of Raskar.

As a result, were the teachings of Miyamoto, Connelly, and Raskar to be combined, such a combination neither being suggested nor deemed appropriate, the resulting combination would not teach the elements of claim 1. Specifically, were the rotational and translational movement aspects of Connelly and Miyamoto combined with the teachings of Raskar, the resulting system would not operate so as to provide "translational movement and rotational movement for adjusting one of a position and an orientation of the projection unit" that produces "from the distorted image a substantially undistorted image on a surface" as

claimed. Rather, the creation of any substantially undistorted image on a surface would, presumably, arise from the use of the pre-distortion of an image space projection of Raskar.

It is therefore evident that the Examiner is in error when asserting that the combination of Miyamoto, Connelly, and Raskar, such a combination neither being suggested nor deemed appropriate, teaches "providing translational movement and rotational movement for adjusting one of a position and an orientation of the projection unit to produce from the distorted image a substantially undistorted image on a surface".

2. In the final Office Action of December 29, 2005, the Examiner asserted that "see column 1 line 60 through column 2 line 9 of Raskar et al. (US 6,793,350) which teaches that even for large curved displays (such as that taught by Miyamoto) that a pre-distorted image is necessary to allow a viewer to view an undistorted image".

In the Advisory Action of April 14, 2006 the Examiner reasserted that "The office disagrees, as taught by Raskar it was well known in the art at the time the invention was made that when projecting on curved surfaces the projected image must be pre-distorted". The Examiner further states that "Accordingly, it would have been obvious to one of ordinary skill in the art that Miyamoto does indeed project a distorted image and it would be obvious for it to do so by using the method of Raskar which has been shown to be superior to other prior art methods. With regards to Raskar's teaching of a sweet spot, this is actually another advantage of the Raskar method, in that the projector can be placed out of the way for projecting on the balloon of Miyamoto while the intended viewers can be in the sweet spot improving convenience of using such a projection system."

Applicants respectfully submit that the Examiner makes at least two clear errors in the above assertions. First, Raskar does not teach "that when projecting on curved surfaces the projected image must be pre-distorted". In fact Raskar teaches the opposite. As Raskar recites at col. 1, line 66 – col. 2, line 10:

> One problem is that when 3D images are displayed on a curved screen, the images are perspectively correct from only a single point in space. This 3D location is known as the virtual viewpoint or `sweet-spot`. As the viewer moves away from the sweet-spot, the images appear distorted. For very

> large display screens and many view points, it is difficult to eliminate this distortion. However, in real-world applications, viewers would like to be at the exact same place where the projectors ideally need to be located. In addition, placing projectors at the sweet-spot means using a very wide-field of view projectors, which are expensive and tend to have excessive radial or `fish-eye` distortion.

As Raskar makes abundantly clear, when 3D images are displayed on a curved screen, the images will appear distorted if viewed from anywhere except from the single point in space known as the "sweet spot". Raskar correctly states this as a fact. Being an immutable result of the application of physics, Raskar engages in no attempt to change this fact. What Raskar does do is make an observation. Specifically, the image projector should ideally be located at the sweet spot. However, such a placement prevents viewers from viewing the image from the sweet spot.

The rest of Raskar is directed, generally, to teaching a method of projecting overlapping portions of an image each portion projected from a different projector to form a single image on a curved surface. By so doing, the projectors can be moved away from the sweet spot. In addition, as each projector is projecting only a portion of the image, the projectors need not be wide-field of view projectors.

It is therefore clear that the distortion to which Raskar refers is that which is perceived by a viewer as a result of the viewer's position. It must be emphasized that, as Raskar states, there is no viewer distortion when viewed from the sweet spot. As is evident, this distortion described by Raskar is not related to any distortion, "pre" or otherwise, of the projected image.

In addition, it is most emphatically not true, as the Examiner asserts, that "even for large curved displays (such as that taught by Miyamoto) that a pre-distorted image is necessary to allow a viewer to view an undistorted image". As made clear above, Raskar accepts the simple fact that viewing an image from anywhere other than the sweet spot causes the appearance of distortion. It is not any form of pre-distortion, but rather the placement of the viewer at the sweet spot, that reduces the appearance of distortion as taught by Raskar. As is therefore evident, far from teaching that "when projecting on curved surfaces the projected image **must** be pre-distorted" as the Examiner asserts, Raskar teaches that it is

common to display an image (making no mention of a distorted image) on a curved surface and that "the images appear distorted" as one moves around the image.

Second, the Examiner is clearly in error when asserting that "it would have been obvious to one of ordinary skill in the art that Miyamoto does indeed project a distorted image and it would be obvious for it to do so by using the method of Raskar which has been shown to be superior to other prior art methods".

Applicants respectfully point out that Miyamoto makes no mention of a distorted image, neither teaches nor suggests a motivation for projecting a distorted image, and lacks a teaching of a mechanism by which Miyamoto could distort an image. Substantiation for these arguements may be found in the Response of March 24, 2006, at page 10, line 23 – page 11, line 21.

Further, and as was argued above, even if Miyamoto were to be combined with Raskar (which is not admitted is suggested), the resulting combination would presumably employ the pre-distortion of an image space projection, and clearly would not suggest the subject matter recited in claim 1. Applicants note that independent claims 24, 30, 34, 35, 37, and 40 recite elements similar to those discussed above with reference to claim 1 and, as a result, are likewise allowable for the reasons noted above.